**A “Moonth” of Phases Lab**

**Problem:** What causes the phases of the moon?

**Hypothesis:**

**Materials:** floor lamp with 150-watt bulb, pencils, plastic foam ball

**Procedures:**

1. Place a lamp in the center of the room. Make sure there is no lampshade.
2. Close the doors and shades to darken the room, and switch on the lamp.
3. Carefully stick the point of a pencil into the plastic foam ball so that the pencil can be used as a “handle.”
4. Draw the data sheet on your paper to record your data.
5. Have your partner or one person in your group hold the plastic foam ball at arm’s length in front and slightly above his or her head so that the ball is between him or her and the lamp.
6. The ball should be about 1 to 1.5 m away from the lamp. Adjust the distance between the ball and the lamp so that the light shines brightly on the ball.
7. Stand directly behind your partner and observe what part of the ball facing you is lit by the lamp. If light is visible on the ball, draw the shape of the lighted part of the ball, draw the shape of the lighted part of the ball on the data sheet provided on the next page.
8. Have your partner turn 45° to the left while keeping the ball in front and at arm’s length.
9. Repeat Step 7. Be sure you are standing directly behind your partner.
10. Repeat Steps 8 and 9 six more times until your partner is facing the lamp again. See the diagram for the 8 positions.
11. Change places and repeat Steps 4-10.

**Data Sheet:**

1

3

2

8

7

4

6

5

**Analyze and Conclude:**

1. In your model, what represents Earth? The sun? The moon?
2. Refer back to your data sheet. How much of the lighted part of the ball did you see when facing the lamp?
3. Label your data sheet with the name of the phases of the moon. Which drawing represents a full moon? A new moon? Which represents a waxing crescent? A waning crescent?
4. How much of the lighted part of the ball did you see after each turn?
5. Whether you could see it or not, how much of the ball’s surface was always lit by the lamp? Was the darkness of the new moon caused by an eclipse? Explain your answer.
6. How did making a model help you understand the phases of the moon? What are some disadvantages of using models? What is another way to make a model to represent the moon’s phases?